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What Is Claimed Is:

1. A cell culture medium comprising at least one metal binding compound or at least one transition element complex, said complex comprising at least one transition element or a salt or ion thereof complexed to at least one metal-binding compound, wherein said medium is capable of supporting the cultivation of a cell *in vitro*.
2. The medium of claim 1, wherein said transition element is selected from the group consisting of scandium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, yttrium, zirconium, niobium, molybdenum, technetium, rubidium, rhodium, palladium, silver, cadmium, lanthanum, hafnium, tantalum, tungsten, rhenium, osmium, iridium, platinum, gold, mercury, and actinium, or salts or ions thereof.
3. The medium of claim 1, wherein said transition element is iron, or a salt or ion of iron.
4. The medium of claim 1, wherein said metal-binding compound is selected from the group consisting of a polyol, a hydroxypyridine derivative, , 1,3,5-N,N',N"-tris(2,3-dihydroxybenzoyl)aminomethylbenzene, ethylenediamine-N,N'-tetramethylenephosphonic acid, trisuccin, an acidic saccharide (e.g. ferrous gluconate), a glycosaminoglycan, diethylenetriaminepentaacetic acid, nitrilotriacetic acid mono-, bis-, or tri-substituted 2,2'-bipyridine, a hydroxamate derivative (e.g. acetohydroxamic acid), an amino acid, deferoxamine, ferrioxamine, iron basic porphine, porphyrin and derivatives thereof, DOTA-lysine, a texaphyrin, a sapphyrin, a polyaminocarboxylic acid, an α-hydroxycarboxylic acid, a polyethylenecarbamate, picolinic acid, 4-pyridoxic acid, 3-hydroxy-2-pyridinemaltol, ethyl maltol, Ustilago ferrichrome, nicotinic acid-N-oxide and IRC011.

5. The medium of claim 1, wherein said metal-binding compound is a polyol.

6. The medium of claim 5, wherein said polyol is sorbitol or fructose.

7. The medium of claim 5, wherein said polyol is sorbitol.

8. The medium of claim 1, wherein said metal-binding compound is a hydroxypyridine derivative.

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9. The medium of claim 8, wherein said hydroxypyridine derivative is selected from the group consisting of 2-hydroxypyridine-N-oxide, 3-hydroxy-4-pyrone, 3-hydroxypyrid-2-one, 3-hydroxypyrid-2-one, 3-hydroxypyrid-4-one, 1-hydroxypyrid-2-one, 1,2-dimethyl-3-hydroxypyrid-4-one, 1-methyl-3-hydroxypyrid-2-one, 3-hydroxy-2(1H)-pyridinone, pyridoxal isonicotinyl hydrazone, nicotinic acid-N-oxide, and 2-hydroxy-nicotinic acid.

10. The medium of claim 8, wherein said hydroxypyridine derivative is 2-hydroxypyridine-N-oxide.

11. The medium of claim 3, wherein said transition element ion is a ferrous ion or a ferric ion.

12. The medium of claim 3, wherein said salt of said transition element salt is FeCl_3 .

13. The medium of claim 1, wherein said transition element complex is sorbitol- FeCl_3 .

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14. The medium of claim 1, wherein said transition element complex is 2-hydroxypyridine-N-oxide.

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15. The cell culture medium of claim 1, said medium further comprising one or more ingredients selected from the group of ingredients consisting of at least one amino acid, at least one vitamin, at least one inorganic salt, at least one organic salt, at one trace metal, at least one nucleotide, at least one buffering salt, at least one sugar at least one lipid and at least one hormone.
16. The cell culture medium of claim 1, wherein said cell culture medium supports the growth or cultivation of at least one cell selected from a group consisting of eukaryotic cells and prokaryotic cells.
- 10 17. The cell culture medium of claim 16, wherein said eukaryotic cells are selected from a group consisting of fish cells, plant cells, animal cells, insect cells and avian cells.
- 15 18. The cell culture medium of claim 17, wherein said cells are selected from a group consisting of 293 cells, PER-C6 cells, CHO cells, COS cells and Sp2/0 cells.
19. The cell culture medium of claim 1, wherein the medium is serum free.
- 20 20. The cell culture medium of claim 1, wherein said medium is a defined medium.
- 25 21. The medium of claim 19, wherein said transition element is iron, or a salt or ion thereof.
22. The medium of claim 1, wherein said medium does not contain transferrin..
- 30 23. The medium of claim 1, wherein said medium does not contain animal derived metal carriers.

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24. A cell culture medium obtained by combining a cell culture medium with at least one metal binding compound or at least one transition element complex, said complex comprising at least one transition element or a salt or ion thereof complexed to at least one metal-binding compound, wherein said medium is capable of supporting the cultivation of a cell *in vitro*.
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25. The medium obtained according to claim 24, wherein said transition element is selected from the group consisting of scandium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, yttrium, zirconium, niobium, molybdenum, technetium, rubidium, rhodium, palladium, silver, cadmium, lanthanum, hafnium, tantalum, tungsten, rhenium, osmium, iridium, platinum, gold, mercury, and actinium, or salts or ions thereof.
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26. The medium obtained according to claim 24, wherein said transition element is iron, or a salt or ion thereof.
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27. The medium obtained according to claim 24, wherein said metal-binding compound is selected from the group consisting of a polyol, a hydroxypyridine derivative, 1,3,5-N,N',N"-tris(2,3-ethylenediamine-N,N'-dihydroxybenzoyl)aminomethylbenzene, tetramethylenephosphonic acid, trisuccin, an acidic saccharide, a glycosaminoglycan, diethylenetriaminepentaacetic acid, nitrilotriacetic acid, mono-, bis-, or tris-substituted 2,2'-bipyridine, a hydroxamate derivative (e.g. acetohydroxamic acid), an amino acid derivative, deferoxamine, ferrioxamine, iron basic porphine, porphyrin and derivatives thereof, DOTA-lysine, a texaphyrin, a sapphyrin, a polyaminocarboxylic acid, an α -hydroxycarboxylic acid, a polyethylenecarbamate, picolinic acid, 4-pyridoxic acid, 3-hydroxy-2-pyridineethyl maltol, maltol, Ustilago ferrichrome, nicotinic acid-N-oxide, 2-hydroxy-picotinic acid, and IRC011.
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28. The medium obtained according to claim 24, wherein said metal-binding compound is a polyol.

29. The medium obtained according to claim 28, wherein said polyol is sorbitol, dextran, or fructose.
- 5 30. The medium obtained according to claim 29, wherein said polyol is sorbitol.
31. The medium obtained according to claim 24, wherein said metal-binding compound is a hydroxypyridine derivative.
- 10 32. The medium obtained according to claim 31, wherein said hydroxypyridine derivative is selected from the group consisting of 2-hydroxypyridine-N-oxide, 3-hydroxy-4-pyrone, 3-hydroxypyrid-2-one, 3-hydroxypyrid-4-one, 1-hydroxypyrid-2-one, 1,2-dimethyl-3-hydroxypyrid-4-one, 1-methyl-3-hydroxypyrid-2-one, 3-hydroxy-2(1H)-pyridinone, pyridoxal isonicotinyl hydrazone, nicotinic acid-N-oxide, and 2-hydroxy-nicotinic acid.
- 15 33. The medium obtained according to claim 32, wherein said hydroxypyridine derivative is 2-hydroxypyridine-N-oxide. 13161-30-3
20 20 34. The medium obtained according to claim 24, wherein said transition element ion is a ferrous ion or a ferric ion.
25 35. The medium obtained according to claim 34, wherein said salt of said transition element salt is FeCl_3 .
- 30 36. The medium obtained according to claim 24, wherein said transition element complex is sorbitol- FeCl_3 .
37. The medium obtained according to claim 24, wherein said transition element complex is 2-hydroxypyridine-N-oxide.

38. A method of cultivating a cell comprising the steps of
(a) contacting said cell with a cell culture medium comprising a metal binding compound or a transition metal complex comprising a metal binding compound; and
5 (b) cultivating said cell under conditions suitable to support cultivation of said cell.
39. The method of claim 38, wherein said cell is selected from the group consisting of a mammalian cell, a bird cell, an insect cell, or a fish cell.
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40. The method of claim 39, wherein said mammalian cell is a human cell.
41. The method of claim 38, wherein said cell is a normal cell.
15 42. The method of claim 38, wherein said cell is an abnormal cell.
43. The method of claim 42, wherein said abnormal cell is a transformed cell, an established cell, or a cell derived from a diseased tissue sample.
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44. A kit for the cultivation of a cell *in vitro*, said kit comprising at least one component selected from a group consisting of one or more cell culture media or media ingredients, one or more metal binding compounds, one or more transition elements, one or more transition element complexes and one or more cells.
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45. The kit of claim 44, wherein said transition element is selected from the group consisting of scandium, titanium, vanadium, chromium, manganese, iron, cobalt, nickel, copper, zinc, yttrium, zirconium, niobium, molybdenum, technetium, rubidium, rhodium, palladium, silver, cadmium, lanthanum, 30 hafnium, tantalum, tungsten, rhenium, osmium, iridium, platinum, gold, mercury and actinium, or salts or ions thereof.

46. The kit of claim 44, wherein said transition element is iron, or a salt or ion thereof.
47. The kit of claim 44, wherein said metal-binding compound is selected from the group consisting of a polyol, a hydroxypyridine derivative, 1,3,5-N,N',N"-tris(2,3-dihydroxybenzoyl)aminomethylbenzene, ethylenediamine-N,N'-tetramethylenephosphonic acid, nitrilotriacetic acid, trisuccin, an acidic saccharide, a glycosaminoglycan, diethylenetriaminepentaacetic acid, mono-, bis-, or tris-substituted 2,2'-bipyridine, a hydroxamate derivative, an amino acid derivative, deferoxamine, ferrioxamine, iron basic porphine, porphyrin and derivatives thereof, DOTA-lysine, a texaphyrin, a sapphyrin, a polyaminocarboxylic acid, an α -hydroxycarboxylic acid, a polyethylenecarbamate, picolinic acid, 4-pyridoxic acid, 3-hydroxy-2-pyridineethyl maltol, maltol, Ustilago ferrichrome, and IRC011.
48. A composition comprising the culture medium of claim 1 and at least one cell.
49. The composition of claim 48, wherein said cell is selected from the group consisting of a plant cell, a mammalian cell, a bird cell, an insect cell, or a fish cell.
50. The composition of claim 49, wherein said mammalian cell is a human cell.
51. The composition of claim 48, wherein said cell is a normal cell.
52. The composition of claim 48, wherein said cell is an abnormal cell.
53. The composition of claim 52, wherein said abnormal cell is a transformed cell, an established cell, or a cell derived from a diseased tissue sample.

54. The medium of claim 1, wherein said medium is a 1X medium formulation.
55. The medium of claim 1, wherein said medium is a concentrated medium formulation.

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